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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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EXAMINER	
CONLEY, SEAN EVERETT	

ART UNIT	PAPER NUMBER
1797	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/588,930	MUKADDAM ET AL.	
	Examiner	Art Unit	
	SEAN E. CONLEY	1797	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *31-71* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *31-71* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *8/9/2006*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 112

1. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

2. Claims 31-71 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

The term "substantially completely" in claims 31 and 60 is unclear and indefinite because the Examiner cannot determine if the chemical substance is completely decomposed or substantially decomposed. Dependent claims 32-59 and 60-71 are rejected for the same reason applied to independent claims 31 and 60 above.

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4. Claims 31-36, 39-43, 46-53, 60-62, and 65-69 are rejected under 35 U.S.C. 102(b) as being anticipated by Brown et al. (US 2003/0030011 A1).

Concerning claim 31 and 48-50, Brown et al. disclose a method for substantially completely decomposing undesirable inorganic chemical substance(s) (contaminants such as viruses, fungus, bacteria, and other living and non-living microorganisms that may be pathogenic) in an aqueous solution and/or dispersion, said method comprising the ultraviolet laser treatment step of exposing an aqueous portion of a fluid flow containing one or more undesirable chemical substance(s) to ultraviolet laser irradiation (from laser 154) at a suitable ultraviolet wavelength and at a sufficient energy density for a sufficient period of time of about 15 minutes or less substantially to decompose the undesirable chemical substance(s) in the aqueous portion (see paragraphs [0-013]-[0014], [0016], [0088]-[0109]).

Concerning claims 32-36, 39-43, and 50-51, Brown et al. discloses that the aqueous solution is exposed to ultraviolet laser treatment within the claimed wavelengths, energy density's, pulse rates, and time frames recited in the claims (see paragraphs [0096][0105]-[0109]).

Concerning claim 44, Brown et al. disclose a monitoring step to ensure that the undesirable chemical substances are at a suitable level (see paragraph [0121], see example 3).

Concerning claim 46, Brown et al. employs a spectrometer for monitoring the light beam by passing the beam through a first optically transparent wall of the container, through the aqueous portion, and out of the container through a second optically transparent wall, and into the spectrometer (see figure 16A; see paragraph [0177]).

Concerning claims 52 and 53, Brown et al. discloses the steps of determining optimal fluenece levels to ensure proper treatment of the fluid (see paragraphs [0113]-[0121]).

Concerning claims 60-61 and 66-68, Brown et al. discloses an apparatus for treating an aqueous solution comprising: (a) a reaction vessel (cartridge formed by top 802 and bottom 818 - see figure 8) having an interior region (706) to contain an aqueous portion having the undesirable chemical substance(s) during treatment; (b) an ultraviolet laser device (154), proximate to said reaction vessel capable of generating an ultraviolet laser beam at a wavelength or wavelength range of about 180 nm to 400 nm (55,560 cm-1 to 25,000 cm-1), a pulse rate within the range of 1 to 50,000 pulses per second, and an energy density within the range of 0.1 mJ/mm^2 to 1 J/mm^2 and capable of producing ten times the energy of a conventional UV lamp and, (c) a laser beam window portion (rectangular windows 806 and 810 for passing the UV laser beam) of said reaction vessel that is substantially transparent to ultraviolet laser radiation at wavelengths between about 180 nm to 400 nm (55,560 cm-I to 25,000 cm-1) and is oriented substantially orthogonally relative to the ultraviolet laser beam to pass ultraviolet laser radiation from said ultraviolet laser device into said interior region (see figures 7-8; see paragraphs [0101]-[0109] and [0137]-[0152]).

Concerning claim 62, Brown et al. discloses an analytical system (light monitoring system) that is capable of being used to monitor changes in the chemical composition of an aqueous portion in the reaction vessel during

irradiation by measuring the UV laser passing through the aqueous portion (see paragraphs [0169]-[0181]).

Concerning claim 65, Brown discloses that it is well known to use quartz tubes as the reaction vessel in a fluid treatment process where the fluid is exposed to UV light (see paragraphs [0144] and [0152]).

Concerning claim 69, the reaction vessel includes inlet and outlet ports (704, 706) (see paragraph [0147]; see figure 7B).

5. Claims 60, 69 and 71 are rejected under 35 U.S.C. 102(b) as being anticipated by Goudy, Jr. (U.S. Patent No. 4,661,264).

Concerning claim 60, Goudy discloses an apparatus for treating an aqueous solution comprising: (a) a reaction vessel (95) having an interior region to contain an aqueous portion having the undesirable chemical substance(s) during treatment;(b) an ultraviolet laser device (10), proximate to said reaction vessel capable of generating an ultraviolet laser beam at a wavelength of 249nm (within the claimed range of about 180 nm to 400 nm (55,560 cm-1 to 25,000 cm-1)) and, (c) a laser beam window portion (98) of said reaction vessel that is substantially transparent to ultraviolet laser radiation at wavelengths between about 180 nm to 400 nm (55,560 cm-I to 25,000 cm-1) and is oriented substantially orthogonally relative to the ultraviolet laser beam to pass ultraviolet laser radiation from said ultraviolet laser device into said interior region (see figure 11; see col. 8, lines 28-51).

Concerning claim 69, Goudy discloses that fluid inlet (96) and outlet ports (97) are including in the vessel (70) (see figure 11).

Concerning claim 71, Goudy discloses that the fluid inlet (96) and outlet ports (97) are arranged so that the aqueous flow is capable of flowing opposite to the direction of the ultraviolet laser beam (beam from laser 10) passing through the vessel (95) (see figure 11; see col. 8, lines 28-51)

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

The factual inquiries set forth in *Graham* **v.** *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary.

Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

7. Claim 38 is rejected under 35 U.S.C. 103(a) as being unpatentable over Brown et al. as applied to claim 31 above, and further in view of Stanley (U.S. Patent No. 5,120,450).

Brown et al. does not appear to teach the use of a catalyst to enhance the ultraviolet laser beam treatment of the fluids. Stanley discloses a method of eliminating contaminants in a fluid by exposing the fluid to ultraviolet light from a laser in combination with a catalyst (hydrogen peroxide) (see col. 1, lines 5-20; see col. 3, line 63 to col. 4, line 62). The combination of ultraviolet light from the laser and the catalyst (hydrogen peroxide oxidant) is effective for promoting the oxidation of organic contaminants.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the process of Brown et al. and add a catalyst such as hydrogen peroxide to the aqueous solution before exposure to the ultraviolet laser as exemplified by Stanley in order to enhance the removal of contaminants from the fluid flowing trough the apparatus.

8. Claim 70 is rejected under 35 U.S.C. 103(a) as being unpatentable over Goudy, Jr. as applied to claim 69 above, and further in view of Norris (U.S. Pat. No. 5,942,100).

Goudy, Jr. does not appear to disclose the use of inlet and outlet valves for controlling flow of the fluid through the treatment area. Norris discloses a water treatment apparatus tat exposes the water to ultraviolet radiation as the water passes though the treatment zone. Norris further teaches the use of an inlet valve (82) and an outlet valve (84) for controlling the flow of water though the device and also provides easy and quick service (see col. 3, line 55 to col. 5, line 52; see figures).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the apparatus of Goudy, Jr. and include shut off valves at the inlet and outlet ports of the device as exemplified by the invention of Norris, in order to provide easy and quick service of the device.

Double Patenting

9. Claims 60-71 of this application conflict with claims 61072 of Application No. 10/588,933. 37 CFR 1.78(b) provides that when two or more applications filed by the same applicant contain conflicting claims, elimination of such claims from all but one application may be required in the absence of good and sufficient reason for their retention during pendency in more than one application. Applicant is required to either cancel the conflicting claims from all but one

application or maintain a clear line of demarcation between the applications. See MPEP § 822.

10. A rejection based on double patenting of the "same invention" type finds its support in the language of 35 U.S.C. 101 which states that "whoever invents or discovers any new and useful process ... may obtain a patent therefor ..." (Emphasis added). Thus, the term "same invention," in this context, means an invention drawn to identical subject matter. See *Miller v. Eagle Mfg. Co.*, 151 U.S. 186 (1894); *In re Ockert*, 245 F.2d 467, 114 USPQ 330 (CCPA 1957); and *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970).

A statutory type (35 U.S.C. 101) double patenting rejection can be overcome by canceling or amending the conflicting claims so they are no longer coextensive in scope. The filing of a terminal disclaimer cannot overcome a double patenting rejection based upon 35 U.S.C. 101.

11. Claims 60-71 are provisionally rejected under 35 U.S.C. 101 as claiming the same invention as that of claims 61-72 of copending Application No. 10/588,930. This is a provisional double patenting rejection since the conflicting claims have not in fact been patented.

12. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude"

granted by a patent and to prevent possible harassment by multiple assignees. A nonstatutory obviousness-type double patenting rejection is appropriate where the conflicting claims are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., *In re Berg*, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent either is shown to be commonly owned with this application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement.

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

13. Claims 31-59 are provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 31-60 of

copending Application No. 10/588,933. Although the conflicting claims are not identical, they are not patentably distinct from each other because the process steps recited in claim 31 of the present application are identical to the process steps recited in claim 31 of application 10/588,933, with only the preamble's being different. The preamble in claim 31 of the present application refers to undesirable "inorganic" chemical substances, whereas the preamble of claim 31 in copending application 10/588,933 refers to undesirable "organic" substances.

Since both of independent claims 31 recite identical method steps it would have been obvious to one of ordinary skill in the art that the process is suitable for decomposing any known undesirable chemical substances including either "organic" or "inorganic" chemical substances. Claims 32-36 and 38-59 are fully encompassed by claims 32-36 and 39-60 of copending application 10/588,933.

Claim 37 refers to specific inorganic chemical substances that are to be decomposed but as stated above, since claim 31 of each application recites identical method steps it would have been obvious to one of ordinary skill in the art, through routine experimentation, to utilize the process for decomposition of any known undesirable chemical substances such as the inorganic chemicals in claim 37.

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

Conclusion

14. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Sean E. Conley whose telephone number is 571-272-8414. The examiner can normally be reached on M-F 8:30-5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jill Warden can be reached on 571-272-1267. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

September 23, 2009

/Sean E Conley/
Primary Examiner, Art Unit 1797